

## **REMARKS**

The present Amendment is in response to the Examiner's Office Action mailed June 21, 2004. Claims 8 and 11 are amended and new claim 21 is added. The amendment to claim 8 is to correct a typographical error, and does not affect the scope of the claim. Claims 1-21 are now pending in view of the above amendments.

Reconsideration of the application is respectfully requested in view of the above amendments to the claims and the following remarks. For the Examiner's convenience and reference, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

Please note that the following remarks are not intended to be an exhaustive enumeration of the distinctions between any cited references and the claimed invention. Rather, the distinctions identified and discussed below are presented solely by way of example to illustrate some of the differences between the claimed invention and the cited references. In addition, Applicants request that the Examiner carefully review any references discussed below to ensure that Applicants understanding and discussion of the references, if any, is consistent with the Examiner's understanding.

### **I. PRIOR ART REJECTIONS**

#### **A. Rejections Under 35 U.S.C. § 103**

The Examiner rejects claims 1-2, 6-11 and 13-19 under 35 U.S.C. § 103(a) as being unpatentable over the admitted prior art in view of *McDermott, et al.* (Growth and doping of GaAsSb via metalorganic chemical vapor deposition for InP heterojunction bipolar transistors in Appl. Phys. Lett., Vol. 68, No. 10, 4 March 1996).

The Examiner also rejects claims 3-5, 12 and 20 under 35 U.S.C. § 103(a) as being unpatentable over the admitted prior art in view of *McDermott* and further in view of *Cherng, et al.* (GaAs<sub>1-x</sub>Sb<sub>x</sub> growth by OMVPE in Journal of Electronic Material, Vol. 13, No. 5, 1984).

Applicants respectfully traverse the foregoing rejections for obviousness on the grounds that the Examiner's combination of the admitted prior art with *McDermott* and *Cherng* is improper. To set forth a proper *prima facie* case of obviousness, according to M.P.E.P. § 2143 a suggestion or motivation, either in the references themselves or in the knowledge available to

one skilled in the art, to modify the reference or combine reference teachings, must be shown. Additionally, the fact that the references can be combined is not sufficient to establish *prima facie* obviousness unless the prior art, in addition, suggests the desirability of the combination. M.P.E.P. § 2143.01.

To be properly combinable, the cited references must teach or suggest some motivation for combining the references in the manner suggested by the Examiner. The Federal Circuit's holding in *In re Dembiczak*, 175 F.3d 994, 50 U.S.P.Q.2d 1614 (Fed. Cir. 1999), is instructive on this issue. *Dembiczak* involved a patent on an orange-colored garbage bag, having indicia printed on the outside of the bag so that, when full, it produces the appearance of a Jack-O-Lantern. Rejecting the claims under Section 103, the Examiner combined orange-colored garbage bags that were found to exist in the prior art with a prior art children's book teaching how to produce Jack-O-Lanterns from lunch sacks by drawing eyes, a nose and a mouth on the lunch sack. Reversing the rejection, the Federal Circuit set forth the following requirements on combining references under Section 103:

Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is **rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.** [citations omitted] **Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability - the essence of hindsight.** [citations omitted]

We have noted that evidence of a suggestion, teaching, or motivation to combine may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved . . . . **The range of sources available, however, does not diminish the requirement for actual evidence. That is, the showing must be clear and particular.** [citations omitted] **Broad conclusory statements regarding the teaching of multiple references, standing alone, are not "evidence."**

*In re Dembiczak*, 50 U.S.P.Q.2d at 1617 (emphasis added). Thus, particular findings must be made that manifest the reason that a skilled artisan, with no knowledge of the claimed invention, would have selected and combined certain components, *In re Sang-Su Lee*, 277 F.3d 1338, 1343 (Fed. Cir. 2002), and conclusory statements regarding the Examiner's subjective belief that a person skilled in the art would have been motivated to combine prior art references is insufficient. *Id.* at 1345.

In the present case, after characterizing the present application's "admitted prior art" and *McDermott*, the examiner merely makes broad conclusory statements, unsupported by any factual basis or support, to the effect that it would have been obvious to combine their teachings. To the contrary, *McDermott* relates to bipolar heterojunction transistors whereas the presently recited claims are directed to tunnel junctions. Although  $\text{GaAs}_{(1-x)}\text{Sb}_x$  materials were known in the prior art as evidenced by the cited references, their use in tunnel junctions has not been previously taught or suggested.

Applicant has earnestly studied the cited references and has been unable to locate any teaching, suggestion or motivation for combining the references in the manner proposed by the Examiner. Applicant respectfully requests the Examiner to point out, by column or page and line numbers, any teaching or suggestion expressly set forth in the cited references that provides the requisite motivation necessary to combine the references in the manner suggested by the Examiner. Applicant therefore submits that it is improper for the Examiner, with the benefit of hindsight and armed with applicant's invention as a road map, to indiscriminately pick and choose from among discrete and unrelated parts of the prior art as a mosaic to recreate a facsimile of applicant's invention. *Compare Akzo N.V. v. United States*, 808 F.2d 1471 (Fed. Cir. 1986).

In view of *McDermott's* and *Cherng's* failure to teach a motivation to incorporate GaAsSb layers in tunnel junctions, Applicants submit that the Examiner has failed to set forth a *prima facie* case for obviousness and respectfully request that the rejections be withdrawn.

In addition, claim 11 has been amended to recite that "the tunnel junction is less than about 10 nanometers thick." Support for this amendment can be found at paragraph [0010] of the application as filed. In contrast, *McDermott* discloses a carbon-doped GaAsSb base layer having a thickness of from about 350 Å (35nm) to about 1500 Å (150nm), not to mention the other undoped and oppositely doped GaAsSb layers in the structure. There is no disclosure or suggestion in *McDermott* (or *Cherng*) of such a thin carbon-doped GaAsSb layer.

## II. New Claim 21

Applicant respectfully submits that, consistent with the discussion presented herein with respect to claim 11, new claim 21 (which recites, among other things, "wherein the tunnel

junction has a thickness of less than about 10 nm") is patentably distinct from the methods/devices disclosed in the references cited by the Examiner.

### CONCLUSION

In view of the foregoing, Applicants believe the claims as amended are in allowable form. In the event that the Examiner finds remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, or which may be overcome by an Examiner's Amendment, the Examiner is requested to contact the undersigned attorney.

Dated this 21st day of December, 2004.

Respectfully submitted,



WILLIAM J. ATHAY  
Registration No. 44,515  
Attorney for Applicant  
Customer No. 022913  
Telephone: (801) 533-9800

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